

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claims 1-29 (cancelled).

Claim 30 (Previously Presented): A plastics product of high strength and flexibility, wherein the plastics product is at least one of a crosslinked semifinished product or a crosslinked molded material based on interpenetrating networks and comprises from 10 to 50% by weight of at least one crosslinked thermoplastic and from 90 to 50% by weight of at least one crosslinked melamine resin ether, wherein the at least one of the crosslinked semifinished product or the crosslinked molded material has been produced from a mixture composed of thermoplastics which comprise, based on the total weight of the thermoplastics, from 0.1 to 2% by weight of a thermally decomposing free-radical generator, and melamine resin ethers which comprise, based on the total weight of the melamine resin ethers, from 0.1 to 2% by weight of a hardener.

Claim 31 (Previously Presented): The plastics product of claim 30, wherein the thermoplastic is at least one of

- an ethylene-vinyl acetate copolymer,
- a partially hydrolyzed ethylene-vinyl acetate copolymer whose vinyl acetate content is from 5 to 50% by weight,
- an ethylene-acrylate copolymer,
- an ethylene-methacrylate copolymer whose ethylene content is from 60 to 95 mol%,
- a hydroxy-end-group-terminated aliphatic polyester,
- a polycaprolactone,
- a poly(meth)acrylate whose content of hydroxy-C₁-C₆-alkyl (meth)acrylate in the molecule is from 2 to 10 mol%,
- a polyethylene grafted with from 5 to 20% by weight of a vinyl acetate or C₁-C₈-alkyl acrylate,
- a C₁-C₈-alkyl-methacrylate-grafted polyethylene,

an ethylene- C_3-C_8 olefin copolymer whose ethylene content is from 80 to 95 mol%,

a styrene-butadiene-styrene block copolymer,

a styrene-ethylene-butadiene-styrene block copolymer, or a thermoplastic polyurethane.

Claim 32 (Previously Presented): The plastics product of claim 30, wherein the at least one melamine resin ether has a weight-average molecular weight of from 1500 to 200 000 and a molar melamine/formaldehyde ratio of from 1:1.5 to 1:4.

Claim 33 (Previously Presented): The plastics product of claim 30, further comprising at least one of the following and based in each case on the plastics products, from 10 to 70% by weight of fillers, adsorber materials, inorganic fibers, or synthetic fibers, from 1 to 15% by weight of hydrophobicizers, from 1 to 10% by weight of flame retardants, from 0.1 to 2% by weight of pigments, from 0.1 to 2% by weight of stabilizers, from 0.1 to 5% by weight of auxiliaries.

Claim 34 (Previously Presented): The plastics product as claimed in claim 33, wherein the fillers and adsorber materials are selected from the group consisting of Al_2O_3 , $Al(OH)_3$, SiO_2 , barium sulfate, calcium carbonate, glass beads, siliceous earth, mica, powdered quartz, powdered slate, hollow microbeads, carbon black, talc, phyllosilicates, molecular sieves, rock flower, chalk, talc, cellulose, and cyclodextrines, such as fillers being phyllosilicates selected from the group consisting of montmorillonite, bentonite, kaolinite, muscovite, hectorite, fluorohectorite, kanemite, revdite, grumantite, ilerite, saponite, beidelite, nontronite, stevensite, laponite, taneolite, vermiculite, halloysite, volkonskoite, magadite, rectorite, kenyaite, sauconite, borofluorophlogopite, and synthetic smectites, such as adsorber materials being phyllosilicates selected from the group consisting of montmorillonite, bentonite, hectorite, molecular sieves of types A, X, Y, 5A, silicon-dioxide-based adsorbers, and hollow microbeads.

Claim 35 (Previously Presented): The plastics product as claimed in claim 33, wherein at least one hydrophobicizer is an organosilicon compound selected from the group consisting of organosilanols, organosiloxanes, organosilanes, organoaminosilanes, amino-end-group- or hydroxy-end-group-terminated polyorganosiloxanes; surface-fluorinated SiO₂ nanoparticles, polytetrafluoroethylene nanoparticles, and imide-group-containing copolymers of ethylenically unsaturated C₄-C₂₀ dicarboxylic anhydrides.

Claim 36 (Previously Presented): The plastics product as claimed in claim 30, wherein the plastics product is an injection molding or is a tube, sheet, or profiles.

Claim 37 (Previously Presented): A process for the production of a plastics product, as claimed in claim 30, wherein the plastics product is produced via shaping and crosslinking of pseudoplastic melts of mixtures of melamine resin ethers and of thermoplastics.

Claim 38 (Previously Presented): The process as claimed in claim 37, wherein the plastics product is produced by an extruder process wherein, in a first stage of the process and in a first extruder segment, melt mixtures composed of melamine resin ethers and of thermoplastics are prepared and then the melt mixture is devolatilized after homogenization, and in a second extruder segment, hardener and also decomposing free-radical generator are fed and homogenized in the melt mixture, and

in a second stage of the process, the melt mixture is either discharged from the extruder and palletized or heated in a third extruder segment,

wherein the molding composition pellets are melted in a third stage of the process and the pseudoplastic melt is processed in presses, extruders or injection-molding machines with crosslinking to give semifinished products or molded materials, or wherein the melt mixture is heated in a third extruder segment and the pseudoplastic melt is discharged with crosslinking through a die and is drawn off in the form of a semifinished product.

Claim 39 (Previously Presented): The process as claimed in claim 38, wherein the extruder process has at least one extruder whose length is from 30 to 60 D and equipped with side feed equipment for solid and liquid substances and vacuum devolatilization.

Claim 40 (Previously Presented): The process as claimed in claim 38, wherein the melt mixtures composed of melamine resin ethers and of thermoplastics are prepared at melt temperatures of from 100 to 170°C.

Claim 41 (Previously Presented): The process as claimed in claim 38, wherein the mixture components are fed collectively into the feed hopper, or at least one melamine resin ether is fed into the thermoplastic melt after melting of the thermoplastic by way of side-feed equipment, or at least one thermoplastic is fed into the thermoplastic melt after melting of the melamine resin ether by way of side-feed equipment.

Claim 42 (Previously Presented): The process as claimed in claim 38, wherein, in the second extruder segment, melt temperatures of from 100 to 150°C have been set into the melt mixture.

Claim 43 (Previously Presented): The process as claimed in claim 38, wherein, in the second extruder segment, hardener or thermally decomposing free-radical generator or both are used in the form of masterbatch comprising from 60 to 90% by weight of thermoplastics.

Claim 44 (Previously Presented): The process as claimed in claim 38, wherein at least one of fillers, adsorber materials, inorganic fibers, synthetic fibers, flame retardants, pigments, stabilizers, or auxiliaries are fed into the extruder in the first or second extruder segment or both.

Claim 45 (Previously Presented): The process as claimed in claim 38, wherein, in the third extruder segment, a temperature of from 150 to 240°C has been set.

Claim 46 (Previously Presented): The process as claimed in claim 37, wherein the plastics product is produced by a sintering process.

Claim 47 (Previously Presented): The process as claimed in claim 46, wherein, in a first stage of the process, mixtures composed of at least one melamine resin ether and of at least one thermoplastic are sintered in high-speed mixers, the sintered mixture is cooled, and, after cooling, hardener or thermally decomposing free-radical generator or both are applied in a drum mixer to the sinter mixture, and, in a second stage of the process, the sinter mixture is melted, and the pseudoplastic melt is processed in presses, extruders, or injection-molding machines with crosslinking to give semifinished products or molded materials.

Claim 48 (Previously Presented): The process as claimed in claim 46, wherein the fillers, adsorber materials, inorganic fibers, or synthetic fibers are sintered concomitantly in the first stage of the process.

Claim 49 (Previously Presented): The process as claimed in claim 46, wherein the residence time in the high-speed mixer is from 3 to 30 min and the final temperature is from 90 to 160°C.

Claim 50 (Previously Presented): The process as claimed in claim 46, wherein the temperatures to which cooling of the sinter mixture takes place are from 50 to 120°C.

Claim 51 (Previously Presented): The process as claimed in claim 46, wherein, in the second stage of the process, the sinter mixture is melted at temperatures of from 150 to 240°C.

Claim 52 (Previously Presented): The process as claimed in claim 46, wherein, in the first stage of the process, at least one of flame retardants, pigments, stabilizers, or auxiliaries are applied in a drum mixer.

Claim 53 (Previously Presented): The process as claimed in claim 37, wherein, at least one melamine resin ether is an etherified melamine resin condensate which is free from hydroxymethyleneamino groups bonded to the triazine rings of the melamine resin condensate and from -NH-CH₂-O-CH₂-NH- groups linking triazine rings, and in which C₁-C₁₈ alcohols or diols with molecular weights of from 62 to 20 000 or both have been used for the etherification of the hydroxymethylamino groups.

Claim 54 (Previously Presented): The process as claimed in claim 38, wherein, as hardener for at least one melamine resin ether, acidifiers of the type represented by blocked sulfonic acids, aliphatic C₄-C₁₈ carboxylic acids; aromatic C₇-C₁₈ carboxylic acids; alkali metal salts or ammonium salts of phosphoric acid; C₁-C₁₂-alkyl ethers or C₂-C₈-hydroxyalkyl esters of C₇-C₁₄-aromatic carboxylic acids, or of inorganic acids; salts of melamine or of guanamines with C₁-C₁₈-aliphatic carboxylic acids; anhydrides, half esters or half amides of C₄-C₂₀ dicarboxylic acids; half esters or half amides of copolymers composed of ethylenically unsaturated C₄-C₂₀ dicarboxylic anhydrides and of ethylenically unsaturated monomers of the type represented by C₂-C₂₀ olefins or C₈-C₂₀ vinylaromatics or both; and/or salts of C₁-C₁₂ alkylamines and, respectively, alkanolamines with C₁-C₁₈-aliphatic, C₇-C₁₄-aromatic, or alkylaromatic carboxylic acids, and also with inorganic acids of the type represented by hydrochloric acid, sulfuric acid, or phosphoric acid, are used.

Claim 55 (Previously Presented): The process as claimed in claim 38, wherein, as the thermally decomposing free-radical generator for the crosslinking of the thermoplastic component, free-radical generators whose thermal decomposition has been concluded below 210°C are used, selected from the group consisting of acyl peroxides, alkyl peroxides, hydroperoxides, peroxy carbonates, and peresters.

Claim 56 (Currently Amended): A plastics product as claimed in claim 30, in form of injection moldings, tubes, sheets or profiles for use in the vehicle industry, mechanical engineering, electrical engineering, or electronic products.